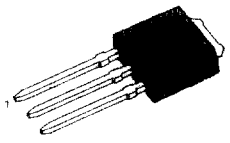
**HIGH SPEED**
**HIGH VOLTAGE SWITCHING**
**INDUSTRIAL USE**

I-PAK



1. Base 2. Collector 3. Emitter

## ABSOLUTE MAXIMUM RATINGS

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Collector Base Voltage | $V_{CBO}$ | 500 | V |
| Collector Emitter Voltage | $V_{CEO}$ | 400 | V |
| Emitter Base Voltage | $V_{EBO}$ | 7 | V |
| Base Current | $I_B$ | 0.25 | A |
| Collector Current (DC) | $I_C$ | 0.5 | A |
| *Collector Current (Pulse) | $I_C$ | 1 | A |
| Collector Dissipation ($T_A$=25℃) | $P_C$ | 1 | W |
| Collector Dissipation ($T_C$=25℃) | $P_C$ | 10 | W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55 ~ 150 | ℃ |

* PW≤300μs, Duty Cycle≤10%

## ELECTRICAL CHARACTERISTICS ($T_C$=25℃)

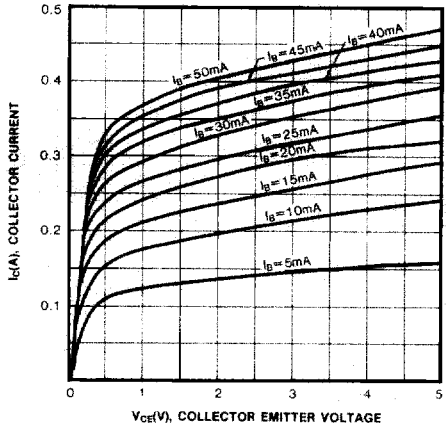
| Characteristic | Symbol | Test Condition | Min | Max | Unit |
|---|---|---|---|---|---|
| Collector Emitter Sustaining Voltage | $V_{CEO}$(sus) | $I_C$ = 0.3A, $I_{B1}$ = 0.06A, L = 10mH | 400 | | V |
| Collector Emitter Sustaining Voltage | $V_{CEX}$(sus)1 | $I_C$ = 0.3A, $I_{B1}$ = -$I_{B2}$ = 0.06A<br>$V_{BE}$(off) = -5V, L = 10mH | 450 | | V |
| Collector Emitter Sustaining Voltage | $V_{CEX}$(sus)2 | $I_C$ = 0.6A, $I_{B1}$ = 0.2, L = 10mH<br>$I_{B2}$ = -0.06, $V_{BE}$(off) = -5V | 400 | | V |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$ = 400V, $I_E$ = 0 | | 10 | uA |
| Collector Cutoff Current | $I_{CER}$ | $V_{CE}$ = 400V, $R_{BE}$ = 51Ω $T_A$ = 125℃ | | 1 | mA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$ = 5V, $I_C$ = 0 | | 10 | uA |
| Collector Cutoff Current | $I_{CEX1}$ | $V_{CE}$ = 400V, $V_{BE}$ (off) = -1.5V | | 10 | uA |
| Collector Cutoff Current | $I_{CEX2}$ | $V_{CE}$ = 400V, $V_{BE}$ (off) = -1.5V<br>$T_A$ = 125℃ | | 1 | mA |
| DC Current Gain | $h_{FE1}$ | $V_{CE}$ = 5V, $I_C$ = 0.05A | 20 | 80 | |
| | $h_{FE2}$ | $V_{CE}$ = 5V, $I_C$ = 0.3A | 10 | | |
| Collector Emitter Saturation Voltage | $V_{CE}$(sat) | $I_C$ = 0.3A, $I_B$ = 0.06A | | 1 | V |
| Base Emitter Saturation Voltage | $V_{BE}$(sat) | $I_C$ = 0.3A, $I_B$ = 0.06A | | 1.2 | V |
| Turn On Time | $t_{ON}$ | $I_C$ = 0.3A, $R_L$ = 500Ω | | 1 | uS |
| Storage Time | $t_{STG}$ | $I_{B1}$ = -$I_{B2}$ = 0.06A, $V_{CC}$ = 150V | | 2.5 | uS |
| Fall Time | $t_F$ | PW = 50μs, Duty Cycle≤2% | | 1 | uS |

* Pulse Test : PW≤350us, Duty Cycle≤2% Pulsed

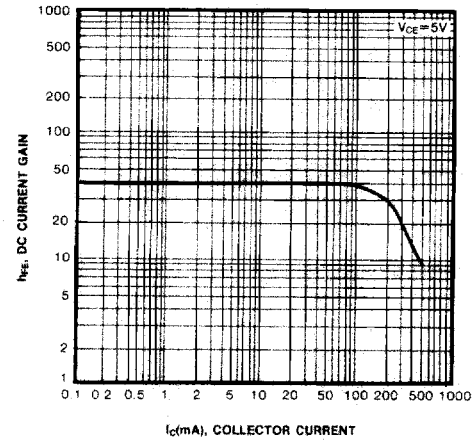
## $h_{FE}$(1) CLASSIFICATION

| Classification | R | O | Y |
|---|---|---|---|
| $h_{FE}$1 | 20 ~ 40 | 30 ~ 60 | 40 ~ 80 |

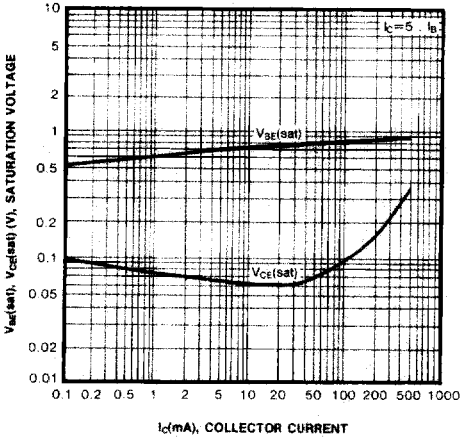
STATIC CHARACTERISTIC



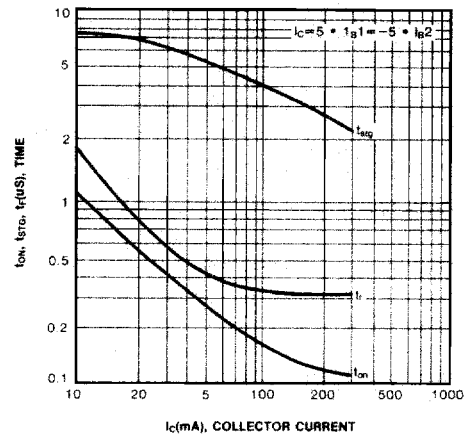

DC CURRENT GAIN



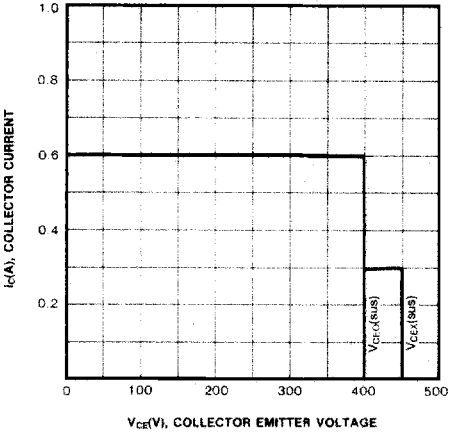

BASE EMITTER SATURATION VOLTAGE
COLLECTOR EMITTER SATURATION VOLTAGE



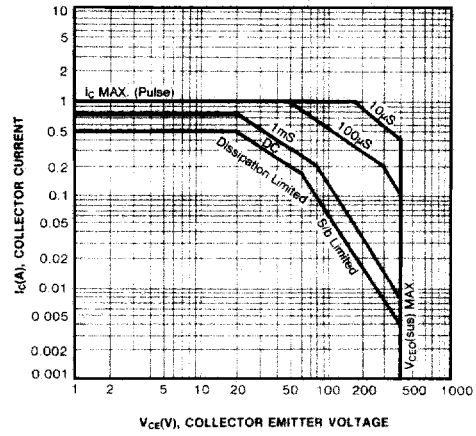

SWITCHING TIME



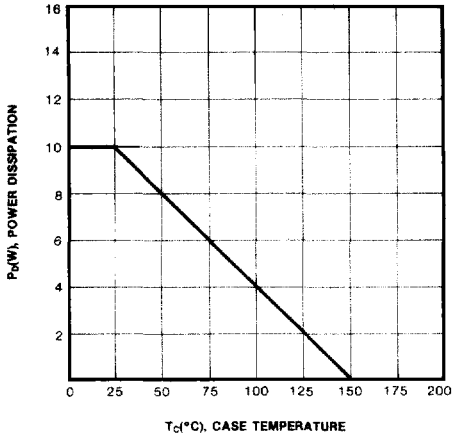

REVERSE BIAS SAFE OPERATION AREA



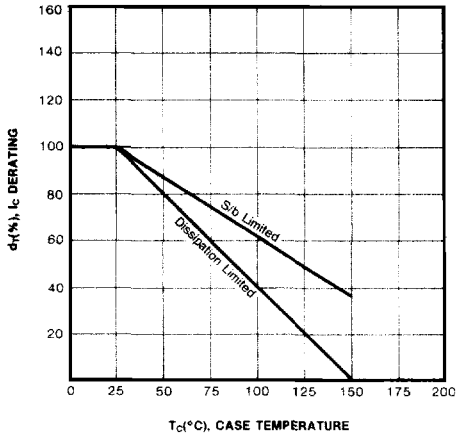

SAFE OPERATING AREA



POWER DERATING




DERATING CURVE OF SAFE OPERATING AREA

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SAMSUNG ELECTRONICS